lessened if a few hours had first been devoted to the treatment of shock.

On the other hand, if a diagnosis of hemorrhage is made, which I think generally can be, after watching the patient for a short time, if the condition of shock is not too pronounced, preparation should be made for opening the abdomen. The location of the injury will often be a guide as to where the abdomen should be opened.

In the emergency preparation of these cases, the abdomen should be thoroughly cleansed over its entire area, as a second incision may be necessary. A large incision should be made as it will not increase the already existing shock as much as severe manipulation of the internal viscera.

During the operation much may be done to forestall shock. If shock is expected, all precautions should be taken and everything made ready for the treatment of post-operative shock, while the operation is going on. The operation should be rapid. All preparations should be made and well planned before it is started. All means should be taken to prevent the loss of body heat. Body and limbs should be wrapped in blankets and heat applied upon the operating table. Special care should be taken that the patient is not lying exposed upon an uncovered cold glass table, especially in operations of length. Loss of blood should be scrupulously avoided. All unnecessary exploration and manipulation of the intestines should be guarded against.

Crile has recently demonstrated on animals that the main factor in shock is the general fall in blood pressure in the peripheral arteries and the coincident rise in pressure in the vessels of the portal system.

If hemorrhage from any of the solid organs exists, ligation of any of the larger vessels of such organ should be attempted, and if it be a general oozing from the surface of the rupture of such organ, suture should be attempted. It is true that many of these cases are fatal, but the cases are desperate to begin with, and we have to do something to make an attempt to save the life of the patient. Where statistics show a very high mortality in this class of cases, recovery often occurs, which would not without surgical interference.

If rupture of the intestinal tract exists, the treatment suggests itself. The opening should be closed but the abdomen should be drained; and especially so if the large intestine is ruptured, as the colon bacillus and other bacteria are more numerous in the large than in the small intestine.

Wounds of the spleen should be sutured and hemorrhage controlled, but in very extensive laceration, splenectomy is infinitely the safer procedure.

Discussion.

Dr. Robert T. Legge, McCloud: This paper which Dr. Hamlin has just read is similar to the one I read before our society last year. I wish to emphasize some of his remarks in regard to the treatment of these cases. In many of these cases that come before us, during the first few hours the only symptom complained of by the patients is the severe pain, and we find it very difficult to diagnose early the difference between shock and severe hemorrhage. Taking the specific gravity of the blood to differentiate between these two conditions is an ideal method. I claim that all severe abdominal injuries should be operated at once, because later on where there is considerable hemorrhage and shock most of the patients die. No so-called conservate treatment or the waiting for reactions is permissible. In reference to the external marks of violence, I have noticed that in two of my cases there were none existing; but upon operating I found a ruptured intestine and a ruptured liver.

Dr. W. I. Terry, San Francisco: I wish to emphasize the matter of waiting for some recovery after shock, when the diagnosis can be made of shock and not of hemorrhage, or shock with a small amount of hemorrhage. It seems to me a better proposition to wait for some return. The reader of the paper spoke of the rapid preparation of the abdomen for operating in these cases that it should be thorough, but I find that a simple preparation of the abdomen can be made which is just as free from danger of infection as the more complicated methods. If the shaving of the skin be done by the dry method and the abdomen painted with diluted tincture of iodin, the disinfection is just as good as the scrubbing and the prolonged methods ordinarily employed.

HOSPITAL SERVICE FOR RAILROAD CONSTRUCTION CAMPS IN THE PACIFIC NORTHWEST.*

By WM. O. SPENCER, M. D., Huntington, Ore.

Living in a part of the country whose extensive natural resources are under process of development, my practice for a considerable portion of the last nine years has included contract hospital service for construction and mining companies. Therefore, in accepting the invitation to read a paper before this Association, it occurred to me that I might appropriately present this subject by detailing some phases of my experience in such work.

For a period of eighteen months from April, 1908, it fell to the lot of the writer to furnish hospital service to two construction companies in the same locality. One was doing the grading for sixty miles of railroad along the Snake River northward from Huntington, including a tunnel twenty-four hundred feet in length through a spur of the mountains, around which the river flows, forming what is known as the Oxbow. The other company was driving a second tunnel fifteen hundred feet long and twice the size of the railroad tunnel through this same mountain for the purpose of diverting through it the waters of the river from its circuitous course of four miles, thereby securing a fall of some forty feet for the generation of power.

The camps of this latter company were, of course, concentrated at the location of this tunnel. The railroad construction company established camps at different points along the line of the proposed railroad, with the largest and more permanent one at the long tunnel.

A village called Copperfield, typical of western frontier life, sprang up near the main camps of the two companies, and here I erected a rough frame building and equipped it for hospital purposes, employing for its maintenance a physician and a nurse.

* Read at Eighth Annual Meeting of Pacific Association of Railroad Surgeons, San Francisco, August 26-27, 1910.

Having already a small hospital in Huntington, cases from camps other than those nearer to Copperfield were brought there.

Notwithstanding the crude facilities for treating patients, and the untoward conditions under which the men lived and worked, the results attained were most gratifying, there occurring no instance where a life was lost or a limb sacrificed on account of wound infection. Naturally, of cases requiring treatment, those of injury were the most numerous, the majority of such being cases of minor injury. In the tunnels, head injuries were, as a matter of course, the most frequent. In these cases, small scalp wounds usually healed by first intention.

The ailments affecting the men ranged from colds and acute indigestion to pneumonia and typhoid fever. Of the latter there were thirty-five cases during the summer and fall of 1909, with one death. In the preceding winter there were seven cases of pneumonia, one also resulting in death.

Of the different forms of illness, by far the greatest percentage of cases were due to errors in diet. In the main the food was wholesome and always plentiful, but prepared and served without much regard for cleanliness or elegance. The men, as a rule, ate their food, or more correctly speaking, devoured it, in record time, ten to fifteen minutes being the time ordinarily spent at the table. This feat was accomplished by filling the mouth to capacity and rapidly bolting the food by copious drafts of coffee or tea. Obviously there was no way of preventing such infractions of dietary rules, for any attempt to regulate the habits of the men in this particular would have been resented as interference with their personal liberty.

So far as personal cleanliness was concerned amongst these men, if the old adage—"Cleanliness is next to Godliness"—be true, then I fear the average employee of construction companies is far from the grace of God. Yet, notwithstanding this handicap to the practice of modern surgery, by the liberal use of soap and water, as a preliminary to surgical procedure, wound infection was the exception and healing of incised wounds by first intention not at all unusual. The happy results attained were doubtless due in large measure to the fact that the patients, as a rule, were strong, robust men, possessing remarkable recuperative powers.

While hospital service for construction companies is conducted along similar lines, and in accordance with the rules and regulations observed by railroad companies, the prevailing conditions call for greatly modified methods of procedure. Whereas hospitals utilized by railroad companies are situated in cities and large towns, those for construction companies are necessarily remote from the centers of population. Like the camps that are the occasion for such services, these hospitals are established on a temporary and transitory basis. Barring any extremely untoward circumstances, such as a sweeping epidemic of some disease, or accidents involving the injury of a large number of men, commercially speaking the enterprise proves successful where any considerable number of men are employed; but from a professional standpoint, it is far from ideal. Yet the service is a valuable and important adjunct to the work of developing the boundless latent resources of a great portion of the Pacific Northwest.

For the most part the men employed in this work are a shiftless class of unskilled laborers, who are barely self-supporting. The contract hospital service maintained by deducting regular monthly dues from the wages of the men, thus employed, provides a way for caring for the sick and injured amongst them that is virtually a boon to these men, and obviates the necessity of their becoming dependent on the bounty of the commonwealth. As a rule the men prefer that this regulation be made, and their employers desire an arrangement whereby they are relieved of the responsibility of providing medical attention for the sick and injured amongst their employees. Yet, if credence is to be given to current report, it is to be regretted that, notwithstanding the palpable benefits and advantages of this institution to the construction companies, in some instances it has not escaped the taint of the graft evil, seemingly so prevalent in the social, as well as political, economy of our country. Forgetting the surgeon's outlay in establishing this hospital system, and the risk and expense he assumes in maintaining it, construction companies are apt to regard the checks they issue to the doctor as more than adequate for the services rendered by him, and some of them evince a desire to retain a substantial share of the hospital funds, nominally as a fee for collecting same. Ethically considered, it is needless to point out the reason why a contract under such conditions should be refused. From a business point of view, such service is a hazardous undertaking at best, and a requirement that materially reduces the gross returns without contributing to the expense side of the account, introduces too great an element of risk to admit of acceptance on the part of the surgeon. Any construction company is fairer to its men and more just to the surgeon when it subscribes to a contract free from the element of graft, and in return demands efficient and adequate service.

As an association, we recognize the fact that contract hospital service has a proper and useful place in the industrial life of the country, and it is to be hoped that the medical profession will see to it that the efficiency and equity of the service shall not be debased by rank commercialism.